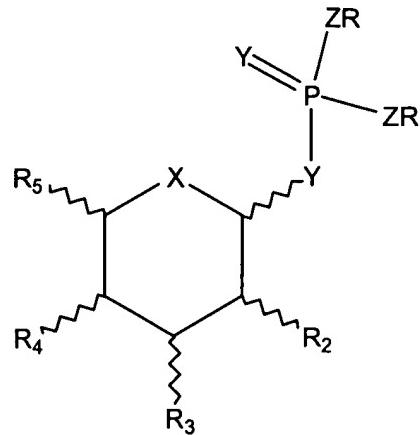


In the Claims:

1. (currently amended) A compound represented by structure 1:



wherein

X represents O;

Y represents independently for each occurrence O;

Z represents independently for each occurrence O;

R is selected, independently for each occurrence, from the group consisting of alkyl, heteroalkyl, aralkyl, heteroaryl, and heteroaralkyl;

R' is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

R'' is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aralkyl, heteroaryl, and heteroaralkyl;

R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> are independently selected from the group consisting of R<sub>6</sub>, -OR', -SR', -NR'₂, -OSO<sub>3</sub>H, and -OPO<sub>3</sub>H<sub>2</sub>;

R<sub>5</sub> is selected from the group consisting of R<sub>6</sub>, -(CR'₂)<sub>n</sub>OR', -(CR'₂)<sub>n</sub>SR', and -(CR'₂)<sub>n</sub>NR'₂;

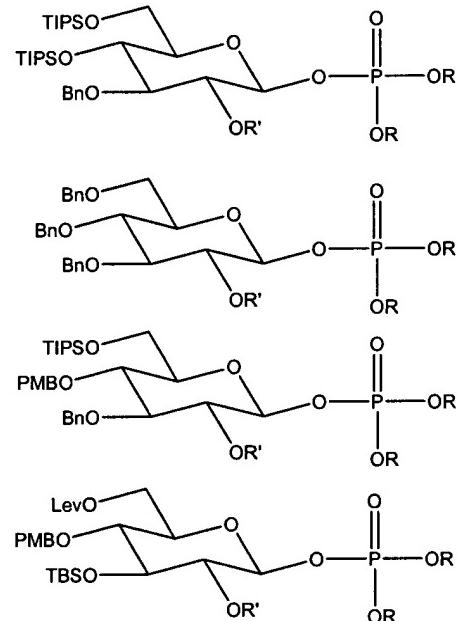
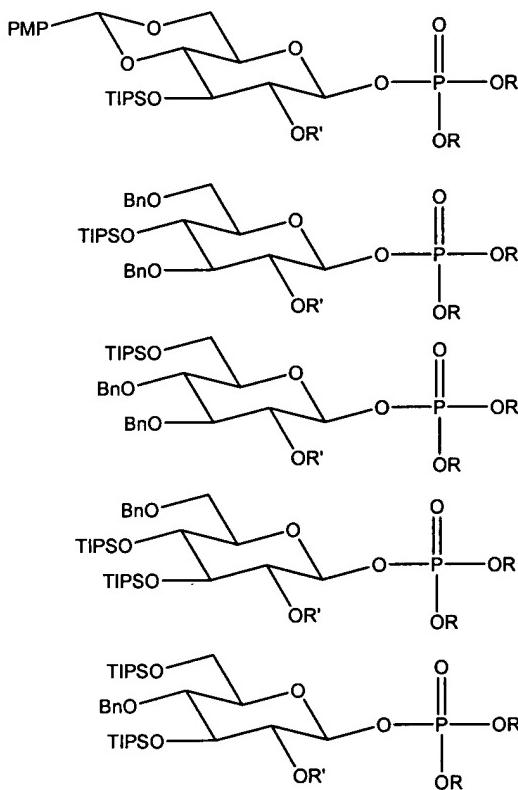
$R_6$  is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl; and

n is an integer selected from the range 0 to 10 inclusive.

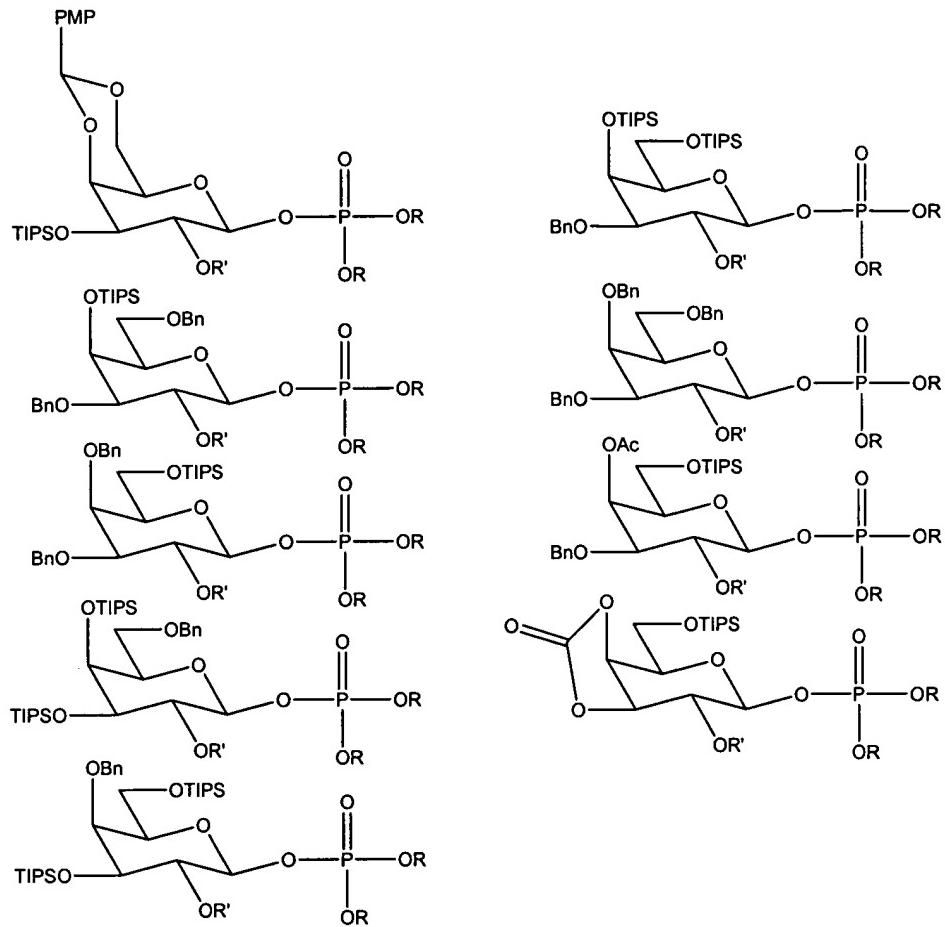
Claims 2-22 (canceled)

23. (currently amended) ~~The compound of claim 1, wherein said A compound is~~ represented by one of the following structures:

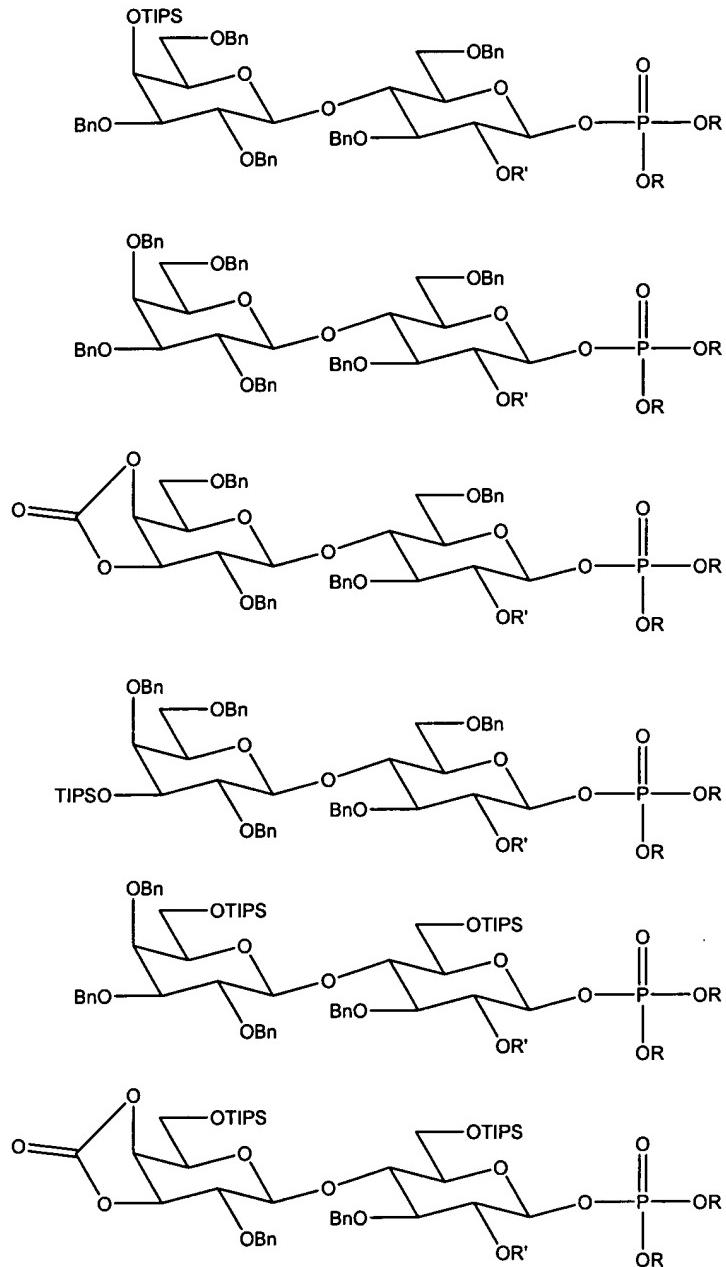
Glucose



**Galactose**



**Lactose**



wherein

R is selected independently for each occurrence from the group consisting of methyl, propyl, butyl, pentyl, hexyl, heteroalkyl, aralkyl, heteroaryl, and heteroaralkyl;

R' is selected independently for each occurrence from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

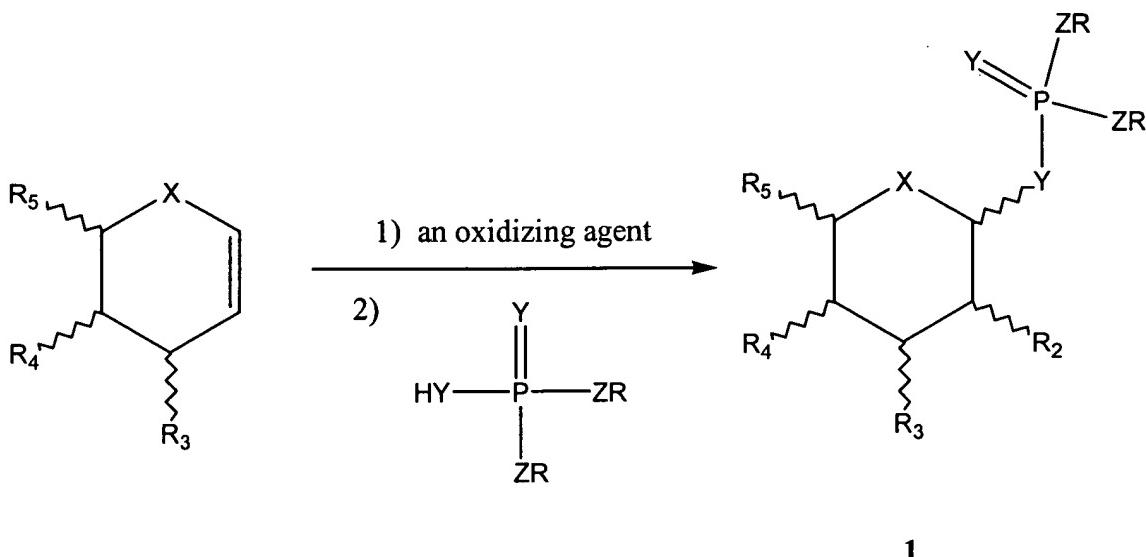
TIPS represents triisopropylsilyl;

PMP represents paramethoxyphenyl; and

Bn represents benzyl.

Claims 24-41 (canceled)

42. (previously presented) A method of synthesizing a compound represented by 1, wherein said method is represented by the following scheme:



wherein

X represents O;

Y represents independently for each occurrence O;

Z represents independently for each occurrence O;

the oxidizing agent is selected from the group consisting of dioxiranes, percarboxylates, and persulfates;

R is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R' is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

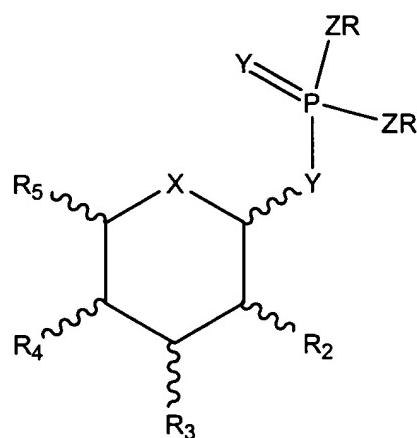
R<sub>2</sub> is OR';

$R_3$ , and  $R_4$  are independently selected from the group consisting of  $R$ ,  $-OR'$ ,  $-SR'$ ,  $-NR'_2$ ,  $-OSO_3H$ , and  $-OPO_3H_2$ ;

$R_5$  is selected from the group consisting of  $R$ ,  $-(CR_2)_nOR'$ ,  $-(CR_2)_nSR'$ , and  $-(CR_2)_nNR'_2$ ;  
and

$n$  is an integer selected from the range 0 to 10 inclusive.

43. **(original)** The method of claim 42, wherein the oxidizing agent is a dioxirane.
44. **(original)** The method of claim 43, wherein the oxidizing agent is dimethyl dioxirane (DMDO).
45. **(previously presented)** A compound represented by structure 2:



2

wherein

$X$  represents O;

$Y$  represents independently for each occurrence O;

$Z$  represents independently for each occurrence O;

$R$  represents independently for each occurrence aryl;

$R'$  is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

R" is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R<sub>2</sub> is selected from the group consisting of R<sub>6</sub>, -OR', -SR', -NR'<sub>2</sub>, -OSO<sub>3</sub>H, and -OPO<sub>3</sub>H<sub>2</sub>;

R<sub>3</sub>, and R<sub>4</sub> are independently selected from the group consisting of R<sub>6</sub>, -OR<sub>7</sub>, -SR', -NR'<sub>2</sub>, -OSO<sub>3</sub>H, and -OPO<sub>3</sub>H<sub>2</sub>;

R<sub>5</sub> is selected from the group consisting of R<sub>6</sub>, -(CR")<sub>n</sub>OR', -(CR")<sub>n</sub>SR', and -(CR")<sub>n</sub>NR'<sub>2</sub>;

R<sub>6</sub> is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R<sub>7</sub> is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, heteroaryl, heteroaralkyl, and sulfonyl; and

n is an integer selected from the range 0 to 10 inclusive.

46. **(previously presented)** The compound of claim 45, wherein R<sub>2</sub> is selected from the group consisting of R<sub>6</sub>, -SR', -NR'<sub>2</sub>, -OSO<sub>3</sub>H, and -OPO<sub>3</sub>H<sub>2</sub>.
47. **(previously presented)** The compound of claim 45, wherein R<sub>5</sub> is selected from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, -(CR")<sub>n</sub>OR<sup>C</sup>, -(CR")<sub>n</sub>SR<sup>S</sup>, and -(CR")<sub>n</sub>N(R<sup>N</sup>)<sub>2</sub>; R<sup>C</sup> is selected from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, and sulfonyl; R<sup>S</sup> is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl; and R<sup>N</sup> is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl.
48. **(previously presented)** The compound of claim 1, where in R is selected, independently for each occurrence, from the group consisting of alkyl, heteroaryl, and heteroaralkyl.
49. **(previously presented)** The compound of claim 1, wherein R<sub>5</sub> is selected from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, -(CR")<sub>n</sub>OR<sup>C</sup>, -(CR")<sub>n</sub>SR<sup>S</sup>, and -(CR")<sub>n</sub>N(R<sup>N</sup>)<sub>2</sub>; R<sup>C</sup> is selected from the group consisting of alkyl,

heteroalkyl, aryl, heteroaryl, heteroaralkyl, acyl, and sulfonyl; R<sup>S</sup> is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl; and R<sup>N</sup> is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl.